Phosphogypsum

Fertilizer is added to soil to improve the quality or quantity of plant growth. Natural fertilizer is composed primarily of manure. While man-made fertilizer contains the same main components of manure, man-made fertilizer ingredients are always consistent and are formulated to produce the best results from plants. One of these components, phosphorous, is inserted into the man-made fertilizer through a process that leaves behind a radioactive waste called phosphogypsum.

Phosphate ore – the source for phosphorous – is recovered by open pit mining. The rock is transported to a washing facility, separated from accompanying soil, and processed. To get the phosphorous into a water-soluble form that the plants will absorb, the phosphate is converted into phosphoric acid. Phosphogypsum, the byproduct from this conversion, contains uranium and radium. The radium is of particular concern because it decays to form radon, a cancer-causing, radioactive gas.

Phosphogypsum is virtually useless, and is disposed of in large, above-ground stacks, or piles. A total of 63 phosphogypsum stacks were identified nationwide in 1989, in 12 different states. Two-thirds of these stacks were located in Florida, Texas, Illinois, and Louisiana. In Central Florida, one of the major phosphoric acid producing areas, the industry generates about 32 million metric tons of phosphogypsum each year, which equals the combined weight of approximately 6.4 million elephants.

Who is protecting you

U.S. Environmental Protection Agency (EPA)

EPA has regulated phosphogypsum since 1989 and has banned all use of the material, except for phosphogypsum with extremely low radionuclide concentrations. EPA requires phosphogypsum to be placed in large piles or “stacks” to prevent it from entering the environment.

The States

Through partnering with EPA, some states have placed restrictions on the management of this material. The State of Florida, for example, has regulations in effect that require proper management and closure of the phosphogypsum stacks in the state. There are also State efforts to minimize the amount of waste generated in the phosphoric acid process, meaning less phosphogypsum generated.

What can you do to protect yourself

Phosphogypsum stacks pose little risk to people because they are highly regulated to prevent unnecessary exposure to the public. The stacks are kept on private property, away from the general public, and workers are required to follow specific radiation safety procedures at the stacks and the phosphate fertilizer plants.

Resources

You can explore this radiation source further through the resources at the following URL:
http://www.epa.gov/radtown/phosphogypsum.html#resources

We provide these resources on-line rather than here so we can keep the links up-to-date.